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09/889,935	12/05/2001	Holger Klapproth	41993	4721

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EXAMINER

FORMAN, BETTY J

ART UNIT

PAPER NUMBER

1634

DATE MAILED: 03/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

412

Office Action Summary

Application No.

09/889,935

Applicant(s)

KLAPPROTH ET AL.

Examiner

BJ Forman

Art Unit

1634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-14 and 24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-14 and 24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 14 December 2004 has been entered.

Status of the Claims

2. This action is in response to papers filed 14 December 2004 in which claims 12-14 and 24 were amended. All of the amendments have been thoroughly reviewed and entered.

The previous rejections in the Office Action dated 24 May 2004, not reiterated below, are withdrawn in view of the amendments. Applicant's arguments have been thoroughly reviewed and are discussed below as they apply to the instant grounds for rejection. New grounds for rejection are discussed.

Claims 12-14 and 24 are under prosecution.

Formal Matters

3. The Claim Listing (pages 2-3 of the response) is objected to because the listing is non-compliant with 37 C.F.R. 1.121 which requires the text of withdrawn claims be presented with each claim listing.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 12-14 and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 12-14 and 24 are indefinite in Claim 24, step a), line 4 for the recitation "said initiated surface" because the recitation lacks proper antecedent basis in the claim. It is suggested the claim be amended to provide proper antecedent basis.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 12 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Pirrung et al (U.S. Patent No. 5,143,854, issued 1 September 1992).

Art Unit: 1634

Regarding Claim 24, Pirrung et al disclose a method for producing a polyfunctional copolymer monolayer (i.e. array of peptides), the method comprising assembly of copolymer chains (peptides, Column 6, lines 22-33) attached to the surface wherein each chain comprises multiple units (amino acids, Column 6, lines 9-20) having one or more functional groups allowing interaction with a sample (e.g. receptor, Abstract). Pirrung et al teach the method comprising immobilizing a layer of ionic polymerization initiators (linkers) on the surface (Column 11, line 66-Column 12, line 20) wherein the initiators comprise functional groups for substrate linkage and polymerization initiation (Column 12, lines 1-67) and initiating polymerization reactions (photoactivation) in the presence of monomers comprising functional groups and polymerizing to produce polymer chains (peptides) (Claim 1).

Regarding Claim 12, Pirrung et al disclose the method wherein the initiator comprises a chlorosilane (Column 12, lines 30-36).

8. Claims 12 and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Sundberg et al (U.S. Patent No. 5,919,523, issued 6 July 1999).

Regarding Claim 24, Sundberg et al disclose a method for producing a polyfunctional copolymer comprising assembly of copolymer chains (oligonucleotides) attached to the surface wherein each chain comprises multiple units having one or more functional groups allowing interaction (hybridization) with a sample the method comprising immobilizing a plurality of polymerization initiators on the surface wherein the initiators comprise functional groups for substrate linkage and polymerization initiation (Column 2, 20-37 and Fig. 8-11) and initiating polymerization reactions in the presence of monomers comprising functional groups (nucleotides) and comonomers (additional monomers) (Column 18, line 28-Column 19, line 59).

Art Unit: 1634

Regarding Claim 12, Sundberg et al disclose the method wherein the initiator comprises a thiol group, chlorosilane or alkoxysilane (Column 11, lines 45-Column 12, line 9).

Response to Arguments

9. Applicant asserts that while Sundberg et al suggests in situ polymerization, they do not teach immobilization of a radical or ionic polymerization initiator from which a polymer is grown. The argument has been considered but is not found persuasive because, as noted above, Sundberg et al teach the method as claimed. The claims are drawn to immobilization of an initiator which is further defined in Claim 12 as comprising a thiol group, chlorosilane or alkoxysilane. Sundberg et al the claimed initiator and subsequent steps of initiating polymerization in the presence of monomers (nucleotides) to provide a polyfunctional copolymer monolayer (Abstract). Applicant appears to suggest that substrate derivatization taught by Sundberg et al comprising linker polymerization does not meet the limitations of the instant claims. However, the claims are not limited to the monomer species of a linker. In contrast, the claims encompass the nucleotide monomers of Sundberg. While Sundberg et al teach additional steps e.g. linker polymerization, the open claim language "comprising" encompasses additional polymerizations i.e. that of oligonucleotides as taught by Sundberg.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 24, 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coté et al (U.S. Patent No. 6,485,703, having priority to provisional application filed, 31 July 1998) in view of DiCosmo et al (U.S. Patent No. 6,132,765, filed 15 April 1997).

Regarding Claim 24, Coté et al disclose a process for production of a polyfunctional copolymer monolayer comprising an assembly of copolymer chains attached to a surface (i.e. hydrogel adherent to a substrate, Column 5, lines 56-62) wherein the copolymer chains comprising monomers with functional groups (Column 6, lines 41-Column 7, line 59) the method comprising immobilizing a plurality of polymerization initiators on the surface (i.e. adherence, Column 26, line 10) and initiating polymerization reaction in the presence of monomers and comonomers (Column 25, line 25-Column 26, line 67). Coté et al teaches the method wherein the initiators and subsequent monolayer are adherent to the surface (e.g. Column 5, lines 56-62) which clearly suggests functional group interaction between the surface and the monolayer. DiCosmo et al teach a similar monolayer wherein the monolayer is adhered to the surface via linker molecules comprising functional groups (Column 5, lines 3-16) whereby the monolayer is maintained on the surface of a medical device thereby reducing device-related infections as taught by DiCosmo (Column 3, line 62-Column 4, line 51).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the function group attachment of DiCosmo et al to the monolayer adherence of Coté et al based on their desire for adherence and for the added benefit of maintaining the monolayer on the surface of a medical device thereby reducing device-related infections as taught by DiCosmo (Column 3, line 62-Column 4, line 51).

Regarding Claim 12, Coté et al disclose the process wherein the initiator comprises a thiol group (Column 25, lines 60-62).

Art Unit: 1634

Regarding Claim 13, Coté et al disclose the process wherein the initiator comprises a ketone group in conjugation with an aromatic system (i.e. 2-2-dimethoxy-2-phenyl-acetophenone) (Example 2, Column 40, line 51-66).

Regarding Claim 14, Coté et al disclose the process wherein the initiator comprises an aromatic ketone (i.e. 2-2-dimethoxy-2-phenyl-acetophenone) (Example 2, Column 40, line 51-66).

Response to Arguments

12. Applicant argues that while the above references teach coating a hydrogel onto a surface, they do not teach immobilization of an initiator as claimed. Applicant acknowledges hydrogel attachment to the surface, but asserts that the references do not teach "immobilization and linkage of initiators on the surface". The arguments have been considered but is not found persuasive because, the instant claims encompass immobilization via coating as taught by Coté et al. The claims merely require the initiators have functional groups. The claims do not require a direct linkage (e.g. covalent attachment) between the initiator and surface.

13. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sundberg et al (U.S. Patent No. 5,919,523, issued 6 July 1999) in view of Coté et al (U.S. Patent No. 6,485,703, having priority to provisional application filed, 31 July 1998).

Regarding Claims 13-14, Sundberg et al disclose a method for producing a polyfunctional copolymer comprising assembly of copolymer chains (oligonucleotides) attached to the surface wherein each chain comprises multiple units having one or more functional groups allowing interaction (hybridization) with a sample the method comprising immobilizing

Art Unit: 1634

a plurality of polymerization initiators on the surface wherein the initiators comprise functional groups for substrate linkage and polymerization initiation (Column 2, 20-37 and Fig. 8-11) and initiating polymerization reactions in the presence of monomers comprising functional groups (nucleotides) and comonomers (additional monomers) (Column 18, line 28-Column 19, line 59). Sundberg et al further teach the linkers comprise aromatic compounds i.e. light sensitive protecting groups wherein the protective groups are selected from a large group of light-reactive groups (Column 12, lines 58-67) but they do not teach aromatic ketones.

However, Coté et al teaches light-reactive groups encompass aromatic ketone (e.g. 2-2-dimethoxy-2-phenyl-acetophenone, Example 2, Column 40, line 51-66). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the aromatic ketone of Coté et al to the photosensitive group of Sundberg et al. One of ordinary skill in the art would have been motivated to do so with reasonable expectation of success based on the encompassing teaching of Sundberg (Column 12, lines 58-60).

The courts have stated with regard to chemical homologs that the greater the physical and chemical similarities between the claimed species and any species disclosed in the prior art, the greater the expectation that the claimed subject matter will function in an equivalent manner (see *Dillon*, 99 F.2d at 696, 16 USPQ2d at 1904).

Conclusion

14. No claim is allowed.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BJ Forman whose telephone number is (571) 272-0741. The examiner can normally be reached on 6:00 TO 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jones can be reached on (571) 272-0745. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

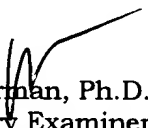
Art Unit: 1634

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

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For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.



BJ Forman, Ph.D.
Primary Examiner
Art Unit: 1634
February 28, 2005